

ELECTROMAGNETIC DRIVING DEVICE AND FLOW RATE CONTROLLING
APPARATUS EMPLOYING THE SAME DRIVING DEVICE

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ABSTRACT OF THE DISCLOSURE

10 Non-magnetic layers are formed on an inner circumferential wall of a housing portion 13 and an outer circumferential wall of a plunger 17, respectively. Assuming that the thickness of the non-magnetic layer of the housing portion is t_0 , the thickness of the non-magnetic layer of the plunger is t_1 , a magnetic gap
15 formed in a radial direction between respective magnetic materials of the housing portion and the plunger which excludes the non-magnetic layers is d_0 , and an air gap formed in a radial direction between the non-magnetic layers when the plunger does not deviate from but remains
20 coaxial with the housing portion is d_1 , the thickness are set so as to satisfy $40\mu\text{m} \leq t_0 + t_1 \leq 80\mu\text{m}$, $d_0 \leq 100\mu\text{m}$. In addition, it is set such that the attracting portion becomes saturated magnetically when the value of electric current that is supplied to a coil increases to reach a
25 predetermined value which falls between 40% or larger and 60% of smaller of a maximum value of the electric current.